WORKSHOP FOR THE DEVELOPMENT OF A FRAMEWORK FOR ENVIRONMENTAL HEALTH SCIENCE LANGUAGE
September 15-16, 2014

Workshop participants from a broad spectrum of disciplines gathered at North Carolina State University on September 15-16, 2014 to establish a collaborative and cross-disciplinary group to inform development of environmental health science language standards and applications. Participants defined the most pressing research questions that would be aided by the development, extension, or adoption of environmental health semantic standards, and identified data areas of critical relevance.

[Day 1 Webcast](#)

8:30 – 8:45 a.m. Linda Birnbaum, NIEHS Introduction and Welcome
8:45 – 9:05 a.m. Melissa Haendel, OHSU and Carolyn Mattingly, NCSU, Meeting Purpose

9:05 – 9:35 a.m. Elaine Faustman, University of Washington
Keynote: Integrating Human Health and Environmental Exposure Data: Lessons Learned From Three Big Data Research Grants

Session I: Existing Triads of Vocabulary, Data, and Tools That Work
Demonstrate how language standards and associated tools are enabling discovery and advancing previously intractable scientific problems.

9:35 –10:35 a.m.
Ramona Walls iPlant Collaborative, Community Standards and Tools for Biodiversity Science University of Arizona and How They Translate Across Disciplines
Melissa Haendel OHSU Monarch: Cross-Species Phenotype Comparisons
Carolyn Mattingly NCSU Addressing Comparative Toxicity Through Vocabulary Based Data Integration

10:35 –10:45 a.m. Break

Session II: Lessons From Community Driven Standards Efforts
Discuss lessons learned from similar community standards efforts. This session will focus on examples of projects at different states of maturity, developmental approaches, and strategies for community buy-in.

10:45 a.m. – 12:00 p.m.
Judith Blake Jackson Laboratory Impact of Biomedical Ontologies on Data Harmonization and Computational Analysis Pipelines
Pier Buttigieg Alfred Wegener Institute Standardizing the Description of Environments: Perspectives From the Environmental Ontology Project
Gail Hodge and EPA The Environmental Protection Agency Science
Lynne Petterson Vocabulary: Leveraging Past, Present, and Future Communities
Carol Hamilton Research Triangle Institute PhenX: Consensus-based Process and Community Engagement
Cathy Wu University of Delaware Protein Ontology (PRO) in OBO Foundry and Community Interoperation

12:00 – 1:00 p.m. Lunch

1:00 – 1:45 p.m. Session II (continued) Open Discussion

Panel Discussion Environmental health needs: gaps and challenges to data use and integration.

1:45 – 2:35 p.m. What scientific questions would benefit most from development and adoption of a common language standard?
Jyotishman Pathak Mayo Clinic College of Medicine
Chirag Patel Harvard University
George Woodall EPA
Richard Kwok NIEHS
Dexter Pratt University of California, San Diego
Stephen Van Den Eeden Kaiser Permanente

2:35 – 2:45 p.m. Break

Session III: Scientific Applications of Vocabularies
Utilization and application of language standards for different applications: where the rubber hits the road in vocabulary use.

2:45 – 3:30 p.m.

Owen White University of Maryland The Human Microbiome Project
Imran Shah EPA Semantics of Health and Toxicity
Chris Mungall Lawrence Berkeley Computing on the Environment National Laboratory

Breakout Session 1 Environmental health research priorities and language standard needs
3:30 – 4:15 p.m.
1. What are the most pressing environmental health research questions that would be aided by the development, extension, or adoption of language standards?
2. What critical data of relevance to environmental health research priorities currently lack language standards?

Breakout Group Chairs
Group 1: Sherri de Coronado
Group 2: Gary Miller
Group 3: Sharlini Sankaran
Group 4: Deirdre Dunn
Group 5: Andy Rooney
4:15 – 4:30 p.m. Break
4:30 – 5:00 p.m. Report Out

Day 2 Webcast
8:30 – 8:40 a.m. Allen Dearry and Cindy Lawler NIEHS Welcome
8:40 – 9:00 a.m. Melissa Haendel, OHSU and Carolyn Mattingly, NCSU Recap of Day 1
9:00 – 9:45 a.m. Alexa McCray Harvard

University Keynote: Ontologically Enabled Modeling of Autism

Breakout 2 Guidance for Advancement of Language Standard Framework for Environmental Health Sciences
9:45 – 11:00 a.m.
Group 1: Sherri de Coronado
Breakout Group 1: What language standards are currently used effectively in or have relevance to environmental health science research? What lessons can we learn from these?

Group 2: Gary Miller
Breakout Group 2: What approaches can advance adoption of language standards by the environmental research community?

Group 3: Sharlini Sankaran
Breakout Group 3: What resources are needed to develop or apply environmental health language standards? What analysis capabilities will be enabled by the development and application of language standards for environmental health data?

Group 4: Deirdre Dunn
Breakout Group 4: How can we ensure flexibility and relevancy as new fields of research or types of data emerge?

Group 5: Andy Rooney
Breakout Group 5: What other research areas/entities would benefit from environmental health language standards and how can they be engaged?

11:00 – 11:15 a.m. Break
11:15 a.m. – Report Out
12:30 p.m.
12:30 – 12:45 p.m. Melissa Haendel, OHSU and Carolyn Mattingly NCSU Summation From Breakout Groups 12:45 – 1:00 p.m. Break
1:00 – 5:00 p.m. Speakers and Chairs Draft Report